ORIGINAL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

SUBJECT: Request for Funding for Removal Action and Exemption from the $2Million and One Year Statutory Limit for a Removal Action at the Elkton Farms Firehole Site, Elkton, Cecil County, Maryland

FROM: Charles E. Fitzsimmons, On-Scene Coordinator
Removal Response Section (3HS31)

THRU: Jerry Heston
Branch Chief, Hazardous Sites Cleanup Division

TO: Abraham Ferdas, Director
Hazardous Site Cleanup Division (3HS00)

I. PURPOSE

The purpose of this Action Memorandum is to request funding for a Removal Action at the Elkton Farms Firehole Site ("Site"), and to request an exemption from the one year and $2 million statutory limitation, pursuant to the Comprehensive Enviromnental Response, Compensation and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. § 9601 et seq. The Site is located at 183 Zeitler Rd., Elkton, Cecil County. Based upon information obtained from the Removal Site Evaluation (RSE) and a review of that information by the On-Scene Coordinator (OSC), CERCLA funding is necessary to conduct a Removal Action to prevent further release of CERCLA hazardous substances from the Site and to protect public health welfare and the environment. Funding in the amount of $4,735,000.00 (of which $2,750,000.00 is from the Regional Removal Allowance) is necessary to mitigate the threats identified in this Action Memorandum.

II. SITE BACKGROUN AND CURRENT CONDITIONS

A. Site Location, Historical Background

The Elkton Farm Firehole Site is located two miles northwest of Elkton, Maryland. The Site occupies at least 55 acres (and potentially 100 acres or more) of an approximate 400-acre farm property presently owned by the MARVA, Ltd. Partnership ("Elkton Farm property") (Figure 1). The Firehole parcel is located on the USGS Bayview/Newark West quadrangles at approximately 39°38' north latitude and 75°53' west longitude and has a Maryland grid coordinate of 655,000 N and 1,117,500 E. The site is bounded on the west by Laurel Run, to the north by Zeitler Road, and to

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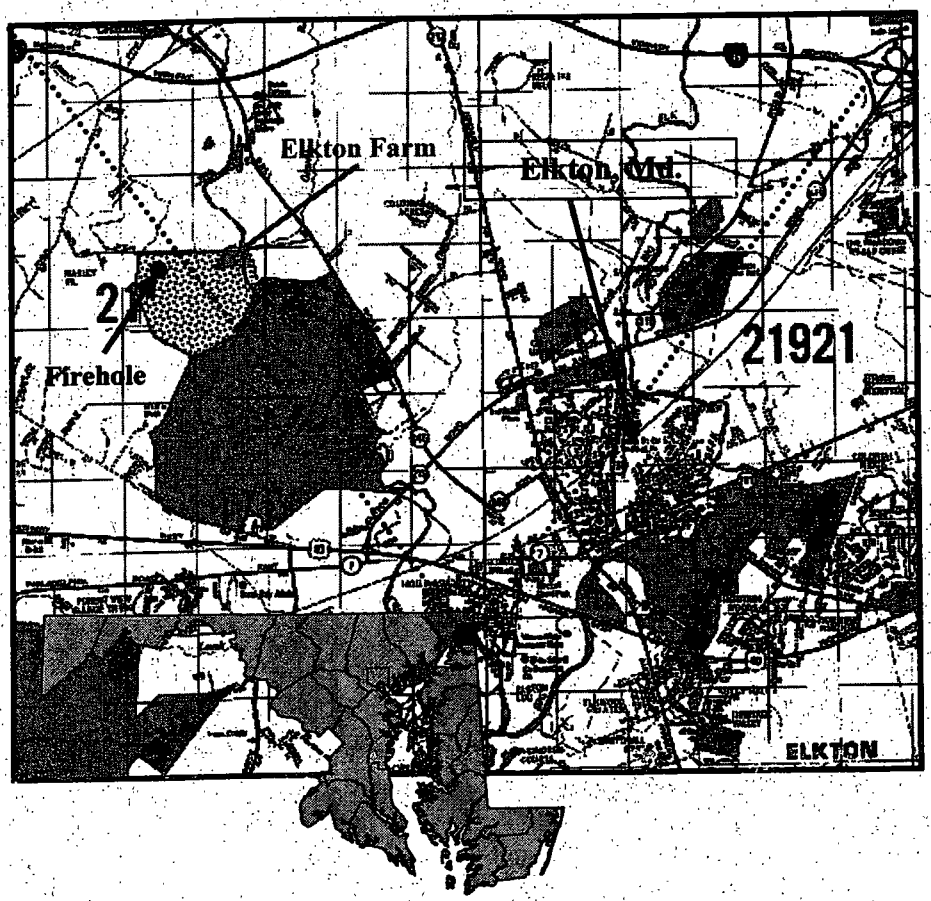
Add TBI description 1991 INPR Bluebell Rd, Elkton Md

the East by Little Elk Creek. A gravel access road bisects the western quadrant of the site. The areas of potential contamination currently identified by EPA are in this western quadrant west of the gravel road. Land use surrounding the site is primarily agricultural/residential, with an area of medium to ~~heavy industry property to the~~ southeast across Little Elk Creek.

During much of its history, the Elkton Farm property has been used as a farm, with much of the surrounding fields (including the location of the fireholes) under cultivation. The contamination to be addressed pursuant to this action memorandum appears to have been disposed of during World War II as part of the operations of Triumph Explosives, Inc., which occupied property adjacent to the Elkton Farm property and which is further described below.

Figure 1 Site Map



The Elkton Farm property lies north of, and adjacent to, the Triumph Industrial Park, a site whose environmental implications are currently being addressed in a collaborative effort involving EPA and the Maryland Department of the Environment ("MDE") as the Little Elk Creek Area-Wide

One Cleanup Program Pilot Project. The property now occupied by the Triumph Industrial Park was originally owned and operated by the Triumph Fusee and Fireworks Company, which was formed in 1933 by the merger of two fireworks companies. Its principal products were fireworks and "fusees" (flares). Beginning as early as 1935 the company had contracts with the U.S. Navy and others to produce fusees, "floatlights" (naval markers), and a variety of other pyrotechnic devices. In 1938 the company changed its name to Triumph Explosives, Inc. ("TEI") and during the next few years, through a series of property acquisitions, expanded its manufacturing operations to include production of TNT, ordnance items, and other explosive and additional pyrotechnic devices which it sold to the U.S. Army and Navy as well as other governmental (non-U.S.) customers. During a four month period bridging 1942 and 1943 the United States assumed direct control of ordnance manufacturing operations at the TEI plant (which USACE has acknowledged included the Elkton Farm property), pursuant to a Presidential executive order. After replacing the original management (two of whom were convicted of bribing acquisition officials) with new personnel, the U.S. returned control of the plant to TEI in 1943.

Ordnance waste disposal activities on the Elkton Farm property appear to have first taken place in approximately 1942, when manufacturing operations at TEI were expanded to accommodate a new 40 mm antiaircraft ordnance production facility for the U.S. Navy. The new facility was built on the location of an existing TEI ordnance waste disposal area, and thereafter ordnance wastes were disposed of on the Elkton Farm property which TEI had purchased. Specifically, various wastes, including munitions residue, were disposed of in a series of shallow pits on the Elkton Farm. TEI apparently collected waste material (including off spec ordnance items and process wastes) from its operations and placed it in drums. This accumulated waste was kept wetted with alcohol or ether to prevent spontaneous combustion, and then carried to a series of shallow pits at the Elkton Farm property, spread thinly, and allowed to burn. Aerial photographs from the era first indicate disposal activities on the Elkton Farm property in 1942. Plant personnel monitored the burn until the wastes were consumed. Photographs in TEI newsletters from the 1940s show the operations of the Fireholes generally (it is not apparent whether these photographs show activities at the original fire hole or the Elkton Farm property).

TEI's contract to produce 40 mm ordnance ended in 1945, after which TEI's operations shrank quickly and it stopped disposing of wastes on the Elkton Farm property. Since the end of TEI's operations the firehole area has been used principally for farming. In the Spring of 1946 TEI sold the property to Argus and Laura Robinson, who sold it later that year to Martin Herron. The current owner of the Elkton Farm property, MARVA, is comprised of several siblings who inherited the property from their father Martin Herron. One of the partners in MARVA reports that the Elkton Farm property has been leased to the same farmer, William Spry, for over 30 years. Spry continues to rotate several seasonal crops through the Elkton Farm's fields. MARVA has entered into an agreement of sale with a private developer who intends to build a residential development on the Elkton Farm property.

It should be noted that the Elkton Farm Firehole Site is one of four areas of contamination that have been or are being addressed on the Elkton Farm property. The four areas include:

- Unit One, comprised of a number of abandoned drums, was addressed by a CERCLA Region III Removal Action in the early 1990's.

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- Unit Two, the site of the historic fireholes to be addressed by this Removal action
- Unit Three, the site of a rocket test/cleaning center which Morton Thiokol leased from MARVA, and whose cleanup by Morton Thiokol is being supervised by MDE.
- Unit Four, a parcel of property adjacent to the G. E. Railcar property (located in the Triumph Industrial Park) which is the potential source of a chlorinated solvent plume. This has been addressed by a separate investigation.

B. USACE, MDE, and EPA site assessment and investigation activities

Following is a summary of relevant site assessment and investigation activities undertaken by the U.S. Army Corps of Engineers ("USACE"), EPA and MDE. Specific conclusions regarding current Site conditions based on these activities are set forth further below.

USACE

In 1991 USACE, after being notified by MDE of its potential liability, issued an Inventory Project Report (INPR) pursuant to DOD's Defense Environmental Restoration Program – Formerly Used Defense Sites ("DERP-FUDS") for the TEI Site (described as the Morton Thiokol – Triumph Industries Site). The INPR found that there were areas of contamination within the former TEI site. The INPR also asserted that although the U.S. government assumed control of TEI's operations for a four month period in 1942 and 1943, at no time did it "own or lease" the property, nor was there any evidence that "during the period of operational DOD management of the facility, the Navy ever modified the company's standard plant operational or waste handling policies." The INPR also noted that there appear to have been a number of subsequent owners and/or operators at the TEI Site which could have contributed to any contamination. Therefore the INPR recommended that USACE address the TEI Site as a PRP/HTW site, i.e. one which is not eligible for DERP funding, and as to which any DOD liability should be addressed in conjunction with other PRPs.

While the 1991 INPR did not include the Elkton Farm property per se, this report is relevant to the Elkton Farm Firehole Site because the USACE has subsequently acknowledged that this property was part of the operations which the U.S. government took over for the four month period in 1942 and 1943.

After being identified as a potentially responsible party by MDE, in 1992 USACE issued a "Final Report, Site Operations/Ownership History Triumph Explosives." ("1992 Final Report"). While focusing on the original TEI Site, this report also contains ownership and operational information concerning the Elkton Farm property, including the Firehole Site. The USACE's 1992 report stated that all wastes from TEI's operations (both U.S. Navy and Army) were disposed of at the fireholes. However, the 1992 USACE report does not suggest

On May 28 In June, 2004 USACE Ordnance & Explosives Safety Specialists toured the Site, during which they identified a number of Munitions and Explosives of Concern ("MEC") related debris on the surface. USACE recommended that

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Site activities should include a unexploded ordnance (UXO) team providing UXO Safety Support as a minimum. Intrusive activities should provide for on-site disposal of UXO items which are deemed too hazardous to transport over public roadways.

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Resume of Staff Visit, June 6, 2004

USACE has also completed a "Risk Assessment Code" ("RAC") score for the Site, based on its May 28June 6, 2004 visit, which assigned it a RAC score of 1, the highest severity, calling for an expedited INPR and "recommending further action by USAESCH."1 [] immediately."

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MDE

MDE has been investigating contamination left behind by TEI and subsequent owners and operators of properties comprising the Little Elk Creek Area-Wide One Cleanup Program Pilot Project for a number of years. Of particular relevance here, in July 2002 MDE undertook a geophysical survey of the firehole area. MDE's contractor, NAEVA Geophysics, Inc. ("NAEVA") reviewed site historical information, aerial photographs, performed site reconnaissance and performed an extensive geo physical survey utilizing EM-31 magnetometer technology.

On September 15, 2004 MDE issued a Formerly Used Defense Site (FUDS) Inspection Report of the Elkton Farms Firehole Site. The purpose of the FUDS Inspection was to assess the actual and potential release of hazardous substances from the site by way of groundwater, surface water, soil exposure and air pathways on sites that were owned and/or operated by the Federal Government. The scope of the FUDS Inspection included reviewing the available file information, site reconnaissance, and conducting sampling through the U.S. EPA Contract Laboratory Program (CLP).

A subsequent site visit by MDE and its contractor UXB, Inc. was conducted in December, 2004 and January, 2005 which included some limited excavation into one of the suspected fireholes. During this visit additional MEC was observed, including ammunition projectiles, percussion primers, and other items. It was not apparent whether any of these items contained high explosives.

EPA

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As a result of MDE's SI activities the EPA Region III Removal Branch was requested by EPA's Brownfields and Site Assessment Section to perform a Removal Site Evaluation ("RSE") of the MEC, including Discarded Military Munitions ("DMM") and any other imminent and/or explosive hazard for determination of a Superfund Time Critical or Emergency Removal Action, in accord with EPA's Interim Final Handbook on the Management of Munitions Response Actions, EPA 505-B-01-001, May 2005. ("EPA Munitions Handbook")2.3 As part of this RSE,

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1 Note that in its July 18, 2005 response to EPA's 104(e) request USACE claims that the RAC worksheet is "a predecisional document that has not been approved or adopted by the Division," and therefore should not be released to the public.

2 Under EPA and DoD guidance, MEC includes (1) Unexploded ordnance (UXO); (2) Discarded military munitions (DMM); or (3) Munitions Constituents (e.g. TNT, RDX) which present in high enough concentrations to pose an explosive hazard. MEC

the EPA and its START contractor (Tetra Tech Inc.), at the direction of the FOSC, performed a geophysical survey of the Firehole Site in May, 2005 which included the 32 acre parcel previously identified by the MDE above. The purpose of the survey was to verify the existence of the Firehole pit(s), and to determine both the depth and areal extent (vertical and horizontal) of the DMM release. Results from this survey revealed the existence of several subsurface anomalies which are likely locations of the fireholes. This survey also suggested that the area of concern extends beyond the originally estimated 32 acre parcel, and could cover 55 acre areas or more..

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II. Site Conditions

The Elkton Firehole Site has not yet been completely geophysically surveyed. MEC may occupy as large as 150 acres, and is part of a flat farm field. The Site presently is planted with a winter wheat crop (a portion of which was harvested in late June and early July, 2005). The wheat is as high as 4 feet. Fifty five 55 acres of the overall Site has been geophysically surveyed, and presently is the area of concern. Results from the START geophysical indicate two fireholes and DMM throughout the 55 acre area of concern. This area of concern includes the two suspected fireholes and comprises the western third of the Site. EPA is aware of no historical data that shows the extent of the original disposal areas, other than a series of aerial photographs which show no disposal on the Elkton Farms property prior to approximately 1942, or after approximately 1945 (apart from the disposal areas described in Units 1 and 3, noted above).

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Over the past 50 years the Elkton Firehole Site has been farmed by the one farmer under a lease agreement with the property's owner. He has cultivated two or three different types of agricultural crops per year including wheat, corn etc. Based on observations made at the Site, by EPA as well as MDE and USCE, this tilling and dragging process appears to have scattered DMM at the surface throughout the 100 acre property. Additionally, freeze/thaw cycles over sixty years may also have contributed to the presence of DMM. The geophysical survey was terminated at 55 acres due to funding issues but it can be assumed that most of the property will have to be addressed for MEC/DMM, at the surface, as part of this action. Indeed, surface MEC/DMM may well be scattered beyond the aforementioned area of concern. As a result of funding issues, the START geophysical survey was terminated at 55 acres. Therefore additional geophysical survey work will need to be done on the remaining 100 acres.

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Located along the south western portion of the portion of the Site, adjacent to (and potentially over) a firehole, is an abandoned concrete and steel structure. This old facility is the Morton Thiokol Rocket Recovery Area (RRA). Neighboring Morton Thiokol (located on the former TEI site) and BoeingBoeiing, Inc. used this facility to test rocket motors in the 1960s. The remnants of this facility included a launch pad and support facilities. Morton Thiokol removed these structures under the supervision of MDE during July and August, 2005.

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was formerly known as Ordnance and Explosives (OE) in DoD parlance. EPA Munitions Handbook at xix.

3 Under EPA and DoD guidance, MEC includes This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks, means: (1) Unexploded ordnance (UXO); (2) Discarded military munitions (DMM); or (3) Munitions Constituents (e.g. TNT, RDX) present in high enough concentrations to pose an explosive hazard. Formerly known as Ordnance and Explosives (OE)

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As described above, the site is as large as 150 acres and is comprised of open farmland bounded by streams and woodlands. As a result, it is too large to erect security fencing. Therefore, in March, 2005 the OSC posted warning signs alerting trespassers and nearby residents that EPA is conducting a Superfund cleanup, and provided a phone number for questions. It also appears that the portions of the site are utilized for hunting and shooting practice. Numerous buck shot shells litter an area adjacent to the RRA area. Therefore commencing in June, 2005 the OSC contracted for security service to alert nonessential personnel of the hazards of the site and provide another level of protection to the general public.

B. Quantities and Types of Substances Present

While the impetus for this Removal Action is the potential explosives threat posed by MEC at the Site, the following discussion includes information on conventional hazardous substances as well as in addition to MEC that has been found. Because. Additionally, because of the potential safety threat posed by handling MEC, neither EPA, USACE, nor MDE has excavated potentially explosive MEC to determine if it is a hazardous substance; therefore the following discussion assumes that the MEC is a pollutant or contaminant.

MEC

MDE's July 2002 geophysical survey of the Elkton Farm Firehole Site reviewed site historical information, aerial photographs, performed site reconnaissance and performed an extensive geo physical survey utilizing EM-31 magnetometer technology. NAEVA concluded that all historical information indicates there were burnpits used by TEI during the 1940s to burn off thinly spread layers of propellants and fuels. Three distinct anomalies in the Unit 2 area were identified. NAEVA recommended another advanced geophysical survey to further delineate and differentiate these anomalies with underground storage tanks and/or underground utilities.

On September 15, 2004 MDE issued its Formerly Used Defense Site (FUDS) Inspection Report of the Elkton Farms Firehole Site. The purpose of the FUDS Inspection was to assess the actual and potential release of hazardous substances from the site by way of groundwater, surface water, soil exposure and air pathways on sites that were owned and/or operated by the Federal Government. The scope of the FUDS Inspection included reviewing the available file information, site reconnaissance and sampling under the U.S. EPA Contract Laboratory Program (CLP).

MDE and its MEC contractor UXB, Inc. conducted onsite SI activities in December, 2004 and January, 2005 which included some limited excavation into one of the suspected fireholes. During this visit a number of MEC items were observed, including ammunition projectiles, percussion primers for 40 MM casings, and other items. UXB has stated that

> These projectiles may have been loaded with or without high explosives; a detailed inspection of each was not accomplished. Typical primary and secondary explosives associated with these projectiles, primers, casings and cartridge actuated devices are explosives and propellants for primary explosive initiating

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Comment [A2]: The following section should first pull together the evidence supporting the UXO threat. Since this is not per se a hazardous substance (based on available info.), this should be presented as a pollutant or contaminant w/ an explosives threat. Key should be the USACE & MDE digs,followed by the debris found over the ground.
Than follow w/ the hist os HSs.
Comment [A3]: Aren't the actual observations of MEC stronger than this hypothesis? Where did the 1% waste estimate come from?
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As a result of the RSE and a thorough review of available site historical date, Table 1 depicts the total specific munitions/explosive material that were produced at the TEI facility during the 1940s:¶
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Triumph (TEI) Explosive Produced¶
22,059,000 40-mm shells¶
65,000 rifle grenades¶
1,345,000 float lights¶
3,097,000 fuzes¶
12 million aircraft signals¶
100 million detonators¶ ... [1]
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mixtures, Lead Aazide, Lead Styphnate, Fulminate of Mercury, Fulminating Mercury, Acetone Peroxide, Lead Picrate, and Sodium Azide, and secondary explosives boosters Tetrytol, PETN and TNT.

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April 5, 2005 letter from UXB to ENSAT

USACE has also identified MEC at the Site which may pose an explosives threat. In a written report documenting the June, 2004 USACE tour of the Site, a number of MEC items were identified, including "a couple of dozen parts and pieces that appeared to be MEC" that MDE had previously gathered, as to which USACE suggested that that "a 911 call be placed for Explosive Ordnance Disposal (EOD) to dispose of the items in the bag." George Follett, Resume of Staff Visit, June 6, 2004. USACE further observed,

> The surface of the first pbp was littered with items that appeared to be ordnance related. Nose and base fuzes. After visually observing hundreds of items on the surface in the vicinity of the pbp, the call to 911 for EOD response was terminated.

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Id.

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Follett concluded that

> Site activities should include a unexploded ordnance (UXO) team providing UXO Safety Support as a minimum. Intrusive activities should provide for on-site disposal of UXO items which are deemed too hazardous to transport over public roadways.

Id.

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Since the depth of the fireholes is unknown (apart from their characterization in historical documents as "shallow pits"), it is difficult to estimate the total quantity of MEC which may be present at the fireholes. However, historical documents suggest that during the peak war time production TEI produced a tremendous amount of ordnance. (Ffor a period of time TEI was the sole source of the Navy's 40 mm antiaircraft munitions.) Table 1 recites the total munitions and other explosive materials that were produced at the TEI during the 1940s:

Comment [A5]: Aren't the actual observations of MEC stronger than this hypothesis? Where did the 1% waste estimate come from?

TABLE 1

Triumph (TEI) Explosive Produced

- 22,059,000 40-mm shells

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- 65,000 rifle grenades
- 1,345,000 float lights
- 3,097,000 fuzes
- 12 million aircraft signals
- 100 million detonators
- 121 million primer caps
- 647,000 lbs of pentolite
- 2,383,000 incendiary bombs
- 355,000 hand grenades

Even assuming one percent of the above items were considered waste or off spec, and subsequently discarded as in the fireholes, there is a potential for a large quantity of materials.

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Comment [c6]: I still think this is a pretty weak argument. & I'm not sure that a burn pit would

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Non-MEC Hazardous substances

This SI report concluded the following: "A toxicological evaluation was prepared for the Firehole site, assuming a residential future use scenario for the site. Risk estimates exceeded EPA and MDE recommended levels for the child resident population for incidental ingestion of and dermal contact with surface soils, with the risk drivers of potential additive effects, chromium, and arsenic. Concentrations detected exceeded the EPA and MDE recommended levels for ingestion of and dermal contact with subsurface soil for the child resident, with the risk drivers of potential additive effects and chromium. Lead was detected in S14 at 1480 mg/kg, which may pose a threat to sensitive populations and the environment. Risk estimates for the incidental ingestion of and dermal contact with groundwater exceeded MDE and EPA recommended levels for all residential populations, with trichloroethene as the risk driver.

Samples S13 and S14 were collected in the area defined by MDE's geophysical survey (Appendix C) as the most likely area of the Firehole. Sample analysis showed elevated concentrations of lead, mercury, and arsenic as well as TCE and Aroclor 1254, and the nitroaromatic compound TNT and associated daughter products. The groundwater collected from monitoring well MW2, which is hydraulically downgradient of S13 and S14, was contaminated with significant concentrations of TCE. Subsurface soil samples from the Firehole area were not collected because of refusal at less than 18 inches. Sample S/SS 6 obtained from the vicinity of the TMRA and sample S8 midway between the Firehole and TMRA also exhibited elevated levels of several explosive compounds.

According to the current owners of the property, the Elkton Farm property is for sale. It is currently leased to farmers in the area for crops; however, in all likelihood, the entire 300-acre farm will be developed for residential use in the future, rather than continued use for farming. The presence of TNT and daughter products, elevated concentrations of metals, highly volatile TCE detected in surface soils and groundwater and the presence of ordnance-related debris easily observable on the ground surface all suggest that further

Comment [A7]: We need to cite to the specifics of the explosives threat.

investigation is necessary in order to fully identify any human health risks to future residential populations."

In December 2004 and January 2005 MDE performed a followup soil sampling event specific to nitroaromatic compounds at the firehole site. Results returned in February 2005 indicated elevated levels of TNT at one location close to the surface. This sample, S7, revealed 1,298ppm (>1%) and exceeds EPA Region III Risk Based Concentrations (RBC) for both residential end use. The RBC standard is 21 ppm. Presently the Firehole site is used for agricultural purposes but is proposed for residential development.

C. National Priorities List Status

This site is not presently on the National Priorities List (NPL). The Preliminary Assessment/Site Inspection (PA/SI) inspection is currently under review by MDE and EPA.

D. State and Local Authorities' Roles

The Elkton Firehole site is part of a larger project called the Little Elk Creek One Cleanup Program . The purpose of the project is to develop a collaborative effort among EPA programs, the State, and local officials in the cleanup and revitalization of the Little Elk Creek, Elkton, Md. area. The Maryland Department of the Environment (MDE) is the overall lead of the project and EPA has provided support to them when requested.

In March of 2004, Windsor Management Corporation, the prospective purchaser of the Elkton Farm, which includes the firehole property, verbally agreed to enter the State Voluntary Cleanup Program (VCP). The MDE explained to Windsor that they would be responsible for any residual contamination at the firehole site after EPA had completed their removal. This residual contamination includes but is not limited to scattered munitions debris, contaminated soils and contaminated groundwater. At this point, Windsor has not yet submitted a formal application to enter the VCP but have verbally acknowledged high interest.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT

Section 300.415 of the NCP lists the factors to be considered in determining the appropriateness of response activities. Paragraphs (B)(2)(i), (ii), (iv), (v) and (vii) apply to the need for response at the Elkton Farms Firehole Site as follows:

300.415(b)(2)(i) *"Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants"*

On May 28, 2004 the USACE, Ordnance and Explosive Safety Specialists, Baltimore District, Md., at the request of MDE, performed a site visit to assess unexploded ordnance hazards. The following Resume of Site Visit document dated June 06, 2004 concluded "MEC related items were discovered on the surface of the property visited. Approximately 8 acres were covered in the site visit walkover. Crops are growing on the site. The site is reported to be farmed year round. What appeared to be projectile nose and tail fuzes, and parts and pieces of pistol flares were observed at the site. There were several areas observed that had no or very little crop growth in relation to the rest of the crop in the area." Recommendations from this site visit were "Site activities should include a unexploded ordnance (UXO) team providing UXO Safety Support as a minimum. Intrusive activities should provide for on-site disposal of UXO items which are deemed too hazardous to transport over public roadways."

On June 29, 2004 the USACE Baltimore District issued a Risk Assessment Code Score (RAC) for the Site. The RAC score is utilized by the USACE to prioritize response actions at FUDs sites. The RAC score for this site was 1(II-A). This score depicted the evaluation to be a high risk with a severity category of critical. This RAC score requires execution of a project response action. The narrative portion of this document revealed "The Navy paid for the construction of over 500 buildings to be used by the contractor TEI for the manufacture of ordnance (40mm shells) and other ordnance related products. A walkover was conducted in the suspected area of the former firehole on 28 May 2004. Numerous suspect MM/MEC related items were observed during the site visit."

Comment [A8]: Weren't there some scarier references? Is this the Follett report?

At the request of the EPA Site Assessment Manager (SAM) and in coordination with the FOSC, the Agency for Toxic Substances and Disease Registry (ATSDR) performed a health consult focusing on the potential for uptake of nitrosamine compounds by plants. ATSDR issued its consult dated 06/01/05. According to this report "ATSDR does not expect that chemical concentrations detected in the surface soil collected from the Firehole portion of the site will pose a public health concern for adults or children residing on the site in the future, if appropriate measures are taken to prevent regular contact with the hot spots of contamination identified. Examples of the hot spots of contamination include the TNT contamination at S7 from the March 2005 sampling event, and the metals contamination at S2 from the December 2004/January 2005 sampling event. This is particularly true of the areas of highest contamination are not used as residential areas or areas where children would regularly frequent."

Comment [A9]: How does this ATSDR consult fit in to the explosives issue? Maybe we want to make a separate finding?

ATSDR overall concludes "ATSDR does not expect adverse human health effects from

consumption of crops grown at this site; Because site-related contamination was documented in ground water samples from this site, drinking water supply options for the proposed residential development will need to be carefully evaluated and appropriate treatment implemented, as needed; ATSDR does not expect that chemical concentrations in surface soil will pose a public health concern for adults or children residing on the site in the future, if appropriate measures are taken to prevent regular contact with the hot spots of contamination identified in the various sampling investigations of this site; Because there is a plume of TCE-contaminated groundwater at this site, and the depth to groundwater is expected to be ~20 feet, this pathway will need to be evaluated further if development plans proceed at this site."

300.415(b)(2)(ii) ***"Actual or potential contamination of drinking water supplies or sensitive ecosystems."***

Comment [A10]: Again, this is going beyond the explosives issue that I thought we were focusing on. Especially since this piece is not prompting the removal (per the last line), maybe this belongs in the site background section.

In May 2003, MDE collected five groundwater samples from site monitoring wells and analyzed them for total and dissolved metals, VOCs, SVOCs, pesticides and PCBs, nitroaromatic compounds, and perchlorates. MDE also collected a water sample from a domestic well at this time to evaluate background groundwater conditions.

- Health-based screening levels for two VOCs were exceeded in the two samples from the onsite groundwater monitoring well MW-2; trichloroethylene (TCE) was detected at 190 ug/L and 170 ug/L, and 1,1,2-trichloroethene was detected at 5 ug/L.
- A trace level (below a health-based screening value) of 4-amino-2,6-dinitrotoluene (.015 ug/L) was also detected in one of the two samples from MW-2.
- Levels of arsenic, lead, and manganese exceeded health-based screening values in the total metals analysis of a few of the groundwater samples. The highest level of total manganese (1,250 ug/L) was detected in the background monitoring well sample (MW-1). Furthermore, the concentration of this metal in MW-1 was reduced below health-based screening levels to 221 ug/L in the dissolved metals analysis. Arsenic was detected at approximately 6 ug/L in MW-3 and below the detection limit in the remaining total metals analyses; it was not present in any of the dissolved analyses. Lead was detected from 11 – 28.5 ug/L in the total analyses, with the highest level found in the background monitoring well sample MW-1, and again was not detected in any of the dissolved metals analyses.
- No perchlorates were detected in any of the groundwater samples.

Presently no drinking water source is impacted by these concentrations. However there is the potential for drinking water to be impacted as a result of the proposed residential

development. This potential will be addressed by MDE under their long term Voluntary Cleanup Program for this site. This will not be addressed under this proposed action.

300.415(b)(2)(iv) *"High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate."*

According to the MDE, USEPA-START contractor, and the USACE, the Elkton Farm site is scattered with potentially thousands of unexploded MEC/DMM. Referencing both the USACE Risk Action Code (RAC) Summary Document dated June, 2004 and EPA START RAC Summary document dated May 2005 both rated this site as Category I. Category I requires immediate response by the DOD Military Munitions Response Program (MMRP).

Comment [A11]: This is the key point re current site conditions. We want to again cite to the FOIlet & MDE digs. & observations. I think the remainder could be deleted, as it's already in the background.

300.415 (B)(2)(v) "Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released"

The Elkton Farm property lays at the confluence of Little Elk Creek with Laurel Run. Natural drainage on the site is in a generalized north to south direction. There is a slight drainage divide on the property which directs surface runoff to either Laurel Run or Little Elk Creek. Surface water infiltrates the soil to groundwater, or is discharged via overland flow to Laurel Run or Little Elk Creek. Laurel Run discharges into Little Elk Creek which flows southward into Big Elk Creek and eventually to the Chesapeake Bay.

The farthest upstream probable point of entry for the surface water route originates at the on-site drainage ditch on the Zeitler Road border of the site. The drainage ditch travels west for approximately 500 feet before emptying into Laurel Run, a perennial freshwater stream and a fishery. Laurel Run flows 0.625 miles to its confluence with Little Elk Creek. The area of the confluence of Laurel Run and Little Elk Creek is classified as Palustrine Aquatic Bed wetlands. Little Elk Creek flows south southeast for approximately 4.0 miles before emptying into the Big Elk Creek. Big Elk Creek flows approximately 2.25 miles to the point where it empties into Elk River. Elk River flows approximately 12.0 miles to its confluence with the Chesapeake Bay. The 15-mile surface migration pathway ends in the Elk River three miles from the confluence of Elk River with the Chesapeake Bay. The Elk River is classified as Estuarine intertidal wetlands and is a fishery.

Washout is evident on the site. Numerous metal objects representing fuses, shells, detonators are visible in the site drainage ditches throughout the site. Adverse weather

conditions including heavy precipitation potentially can carry these objects towards Laurel Run and Little Elk creek. These surface waters will be geophysically surveyed as part of this proposed time critical removal looking for washed out metal DMM objects.

300.415(b)(2)(vii) *"The availability of other appropriate federal or state response mechanisms to respond to the release."*

MDE completed a Preliminary Assessment/Site Inspection (PA/SI) of the Elkton Farm Thiokol Motor Recovery Area (RRA) under a cooperative agreement with EPA Region III in September 2004. It was essentially during this PA/SI that the Firehole Area Site was initially located. In February, 2005 MDE initiated a Formerly Used Defense Site (FUDS) Inspection of the Elkton Firehole Site. The scope of the FUDS Inspection included reviewing the available file information, site reconnaissance and sampling under the U.S. EPA Contract Laboratory Program (CLP). According to the draft FUDS Inspection report by MDE "The total quantity of hazardous waste disposed of in the Firehole is unknown. There is no estimate of fill thickness for the Firehole. A geophysical survey conducted for MDE by NAEVA Geophysics, Inc. (NAEVA) indicated several distinct anomalies on the portion of the property east of Laurel Run and south of Zeitler Road. Observations indicate that the Firehole is not one discrete area but rather a series of burn pits located across the property in an approximate 32-acre area." As a result of these findings the MDE referred this site to EPA Region III Site Assessment Manager (SAM). The SAM requested the EPA Region III Response Program to perform a Removal Site Evaluation. (RSE). There are no other state or federal mechanisms available to perform this Superfund Time Critical Removal Action.

Comment [A12]: Isn't the only thing we say here that MDE does not have the resources? & refer to the enf. Memo re USSACE.

The US ARMY Defense Environmental Restoration Program (DERP) was established to perform removal actions at FUDS sites. Under the DERP program the Military Munitions Response Program (MMRP) was initiated to address non-operational range lands that are suspected to contain UXO, DMM or MC contamination. In order for this site to be eligible for MMRP emergency funding for non range sites, the US ACE would have to determine the site to be a FUDS site with a high RAC score or as the only responsible party identified at a superfund site where UXO, DMM or MC is the threat. Presently this site is under evaluation by the USACE with the final INPR document expected later in 2005.

Comment [A13]: Where does this come from? The 1991 report?

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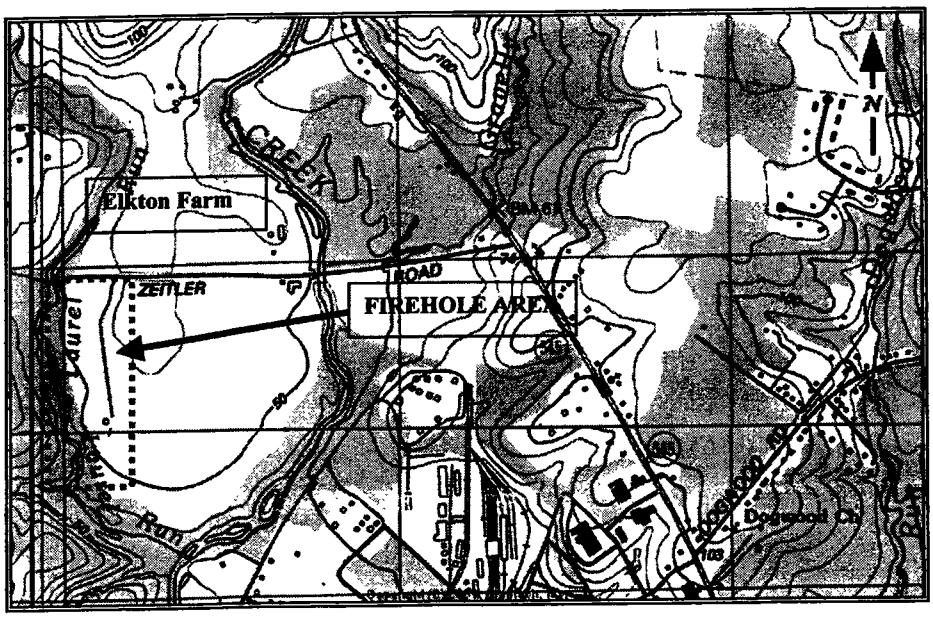
IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response actions outlined in this funding request, may present an imminent and substantial endangerment to the public health, welfare, or the environment.

V. PROPOSED ACTIONS AND COSTS

The Removal Action proposed for the Site is designed to mitigate the imminent threat by removing the MEC/DMM and limited/discreet TNT contamination in the soil at the Site. Presently the site is characterized as a 55 acre plot of farmland located to the south of Zeitler Rd., east of Laurel Run Creek and to the west of Little Elk Creek in Elkton, Cecil County, Md. Refer to Figure 2. The DMM are located in two distinct fireholes at depths ranging from the surface to approximately 8 feet. The DMM are also scattered throughout the surface soils on the site. The geophysical survey performed by START contractor revealed numerous locations/anomalies of potential DMM and different types of DMM such as fuses, 40mm and 20mm casings. A large number of these DMM can be readily seen while walking thru the site.

Figure 2



Presently the site is overgrown with winter wheat at a height of 3 feet. This provides for excellent ground cover and runoff control but will have to be removed. Based on the

geophysical survey report at least 55 acres of this flat farmland will be gridded into 200 x 200 foot squares. Each grid will receive a thorough inspection and surficial soil removal to a large sieve for removal of all metal items. The items will be individually sorted based on size and potential for explosion. The larger items will be temporarily staged behind sandbag blast walls or within a magazine. The smaller items can be run thru a large industrial shredder for demilitarization and residual disposal. The OSC with assistance from the USACE and their MEC/UXO experienced contractor will perform this action. This activity will be performed under a strict Health and Safety Plan with emphasis towards worker protection and experienced UXO professionals. The USACE will be responsible for ensuring that the site is clean of MEC/DMM.

As this activity is ongoing the OSC and START contractor will initiate a sampling event to define the extent of TNT contamination in surface soils in the vicinity of S7. It is not anticipated that this contamination is widespread. MDE results have indicated it to be a discreet area not larger than a 50 x 50 foot area near the Morton Thiokol Rocket Recovery Area. Soil removal and offsite disposal will be the responsibility of the USACE under the IAG.

Based on the START geophysical report there are at least two fireholes estimated to be 50 by 25 feet and up to 8 foot deep. These holes will be addressed by the USACE in the same manner described above. Track hoes with blast shields will unearth the metal and soil and run the material thru a sieve mechanism. The larger items will be staged behind blast walls and the smaller less explosive items will be shredded.

A. Proposed Actions

1. Mobilize/demobilize personnel and equipment;
2. Provide Site security by erecting temporary banner fencing and providing a security guard during non-working hours to protect equipment;
3. Provide erosion, sedimentation and storm water control to minimize release of DMM from the Site;
4. Characterize the extent and depth of TNT contamination at the S7 sample area on the site;
5. Characterize the extent and depth of additional DMM beyond the 55 acres (potentially up to 150 acres) into areas within the tree line and the creek itself utilizing geophysical survey equipment and UXO specialists;
5. Excavate, stage and sieve soils laden with DMM on a pre designated 200 ft. grid by grid basis;
6. Stage large unstable DMM within specially designed blast/sandbag walls or prestaged magazines;

7. Perform onsite demilitarization of all smaller DMM by appropriate means according to the specific DMM;
8. Typical treatment method may include crushing of the smaller DMM and vent and burn operations of the larger;
9. Excavation of limited quantity of TNT contaminated soils and transport off site for disposal;
10. Conduct Site restoration as determined appropriate by the OSC and revegetation to prevent erosion of areas soils disturbed by Removal activities;
11. Coordinate with State and Local authorities on removal and post-removal activities and conditions;
12. Demobilization of personnel and equipment.

B. Contribution To Remedial Performance

The Site has not been proposed for the NPL, therefore there are no Remedial Actions planned for the Site at this time. However, the proposed Removal Action is consistent with Superfund cleanup policy that applies to both Remedial and Removal sites and will contribute to and not impede future Remedial action and/or MDE voluntary cleanup procedures, at the Site

C. Compliance With ARARs

The proposed Removal Action will comply with Applicable or Relevant and Appropriate Requirements (ARARs), to the extent practicable considering the exigencies of the situation. The OSC intends to comply with all relevant federal and state laws relative to proper transport and disposal of hazardous wastes and site health and safety.

D. Estimated Costs

Due to the nature and volume of the hazardous substances (explosive DMM and TNT contaminated soils) found at the Site, the OSC has initiated discussions with the US Army Corps of Engineers (USACE), Baltimore District for assistance. Under an Interagency Agreement between the EPA Region III and the USACE, the OSC will enlist the technical (EOD) support and engineering expertise with respect to project management and utilization of the USACE contractor in the safe handling, onsite demilitarization, transportation (if required) and final clearance of the site for return to reuse as either a farmland or as a residential development area as is currently proposed.

The OSC with assistance from the START contractor and MDE will perform onsite oversight of the USACE. In addition the OSC will complete the characterization of the TNT laden soils and the determination of whether DMM items are located outside the 55 acre area of concern. This will involve additional geophysical survey work to be performed by START.

I.Extramural Costs
A. Regional Removal Allowance Cost:

IAG with USACE/Total Cleanup Contractor Costs: (Includes DMM/UXO contractor, excavation, transport, disposal, Onsite DMM handling, etc)	$2,500,000.00
IAG with USACE/Project Management Costs: (Admin.,MEC Safety,QA support)	$250,000.00
Subtotal Regional Removal Allowance Cost:	$2,750,000.00

B. Other Extramural Costs Not Funded from the Regional Allowance:

Total START, including multiplier costs: (geophysical surveying, sampling and oversight)	$ 250,000.00
Total CLP	$ 50,000.00
Subtotal	$ 300,000.00
Subtotal, Extramural Costs	$3,050,000.00
Extramural Costs Contingency	$ 600,000.00
TOTAL, EXTRAMURAL CEILING	**$ 3,650,000.00**

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Without removal of the munitions and explosives of concern/discarded military munitions which are described in this Action Memorandum, there is the potential for one of these devices to seriously injure a site trespasser, farmer or resident in the area. There is the potential for washout of these munitions into nearby Laurel Run Creek or Little Elk Creek creating a scenario where nearby children could come into contact with them. In addition new proposed development of single family homes on this site and the adjacent farmland would be precluded.

VII. OUTSTANDING POLICY ISSUES

There are no outstanding policy issues pertaining to the Elkton Farms Firehole Site.

IX. ENFORCEMENT STATUS

The EPA Region III Office of Enforcement has been provided with all background information relative to this site (see attached Confidential Enforcement Addendum). The total EPA costs for this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be $:[4]

Direct Extramural Costs:	$3,650,000.00
Direct Intramural Costs:	$100,000.00
Indirect Costs:	$985,000.00
Total Estimated Cost:	**$4,735,000.00**

The OSC has provided the EPA Removal Enforcement Section with information available to pursue any and all enforcement actions pertaining to the Site. A summary of all enforcement activities to date is attached as an addendum to this document.

X. RECOMMENDATION

This decision document represents the selected removal action for the elkton Farms Firehole Site, in Elkton, Cecil County, Maryland developed in accordance with CERCLA as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the Site.

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[4] Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of Site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

Condition at the Site meet the criteria for a Removal Action as set forth in Section 300.415 of the NCP, 40 C.F.R. § 300.415, I recommend your approval of the proposed removal action. The total removal action project ceiling if approved will be $ 4,735,000.00. Of this, an estimated $2,750,000 comes from the Regional removal allowance.

Approved _____ Date _____

Disapproved _____ Date _____

ATTACHMENT: Confidential Enforcement Addendum